

symptomatic vitreomacular adhesion resolution on visual fixation and macular sensitivity using microperimetry.

**Methods:** A total of 220 subjects were randomized into the OASIS study, from which 27 were enrolled into the MP-1 substudy (19 ocriplasmin, 8 sham). The substudy was conducted at 3 sites with protocol-specified microperimetry instruments. Fixation-related data included location, degree of eccentricity, and quantitative fixation stability (eg, bivariate contour ellipse area). Retinal sensitivity-related data included the number of normally functioning and scotomatous points and mean sensitivity within various macular grid regions.

**Results:** Baseline (BL) characteristics of the MP-1 subset were largely similar to the OASIS study. The mean distance of the preferred fixation locus to the anatomic center decreased slightly after ocriplasmin injection from 1.32 degrees at BL to 1.11 degrees at Day (D) 7, returning to BL levels (1.28 degrees) by D28, compared to the sham group (1.19, 1.43, and 1.75 degrees at BL, D7, D28, respectively). This distance was identified as a predictor of VMT resolution ( $P=.023$ ). In the ocriplasmin group, the median relative scotoma increased postinjection from 1.0 at BL to 6.0 at D7 before recovering to 1.0 at Month (M) 6, whereas more scotomas were detected in the sham group over time (3.5, 4.0, and 5.0 at BL, D7, and M6, respectively). Mean bivariate contour ellipse area decreased slightly after ocriplasmin injection, from 5.98 degrees squared at BL to 4.26 degrees squared at D7 and 5.38 degrees squared at D28, compared to sham (7.73, 7.41, and 8.85 degrees squared at BL, D7, and D28, respectively). Subjects with VMT resolution at D28 had lower bivariate contour area and less relative scotoma at BL than those without. Of the visual function parameters, correlations were strongest for contrast sensitivity followed by best-corrected visual acuity, with no anatomical correlations.

**Conclusions:** Despite the small sample size, the MP-1 substudy suggests that in the ocriplasmin group, fixation and sensitivity parameters tended to be better than in the sham group over time. Although sensitivity seemed to decrease from D7 to D28 (with more relative scotomatous points) in the ocriplasmin group, it recovered subsequently.

**Commercial Relationships:** Srinivas R. Sadda, Novartis (C), Roche (C), Allergan (F), Genentech (C), Stem Cells (C), Genentech (F), ThromboGenics (C), Allergan (C), Iconic (C); Petra Kozma-Wiebe, Thrombogenics NV; Esmeralda Meunier, Thrombogenics NV

**Program Number:** 1808

**Presentation Time:** 11:45 AM–12:00 PM

**Visual field deterioration in central 10 degrees after vitrectomy for macular diseases in patients with glaucoma**

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**Purpose:** To investigate retinal sensitivity changes in the central 10 degrees after vitrectomy for epiretinal membrane (ERM) or macular hole (MH) in patients with glaucoma.

**Methods:** Seventy-one eyes of 71 patients who underwent vitrectomy with internal limiting membrane (ILM) peeling for ERM or MH were included: glaucoma patients (G group), 29 eyes; non-glaucoma control group (C group), 42 eyes. The main outcome measure was postoperative visual field (VF) changes ( $5.3 \pm 4.3$  months after surgery) in standard automated perimetry (Humphrey visual field analyzer II, SITA standard 10-2 program). For each test point,  $\geq 5$  dB decrease in total deviation postoperatively was defined as deterioration in G group. For C group, test points with probability  $<1\%$  on a pattern deviation map of postoperative VF were deemed as deterioration. We also evaluated best-corrected visual acuity (BCVA) and ganglion cell complex (GCC) thickness in the central

10 degrees by optical coherence tomography (RS-3000, NIDEK). VF and GCC thickness were analyzed in each sector; center, inner ring, and outer ring, defined by three concentric circles,  $3.3^\circ$ -,  $10^\circ$ - and  $20^\circ$ -diameters. Preoperative and postoperative factors related to the mean deviation (MD) changes were identified using univariate and multivariate linear regression analysis.

**Results:** Postoperative MD was  $-9.4 \pm 6.7$  dB in G group, and  $-1.1 \pm 1.1$  dB in C group. Postoperative pattern standard deviation (PSD) was  $8.7 \pm 5.0$  dB in G group, and  $1.4 \pm 0.6$  dB in C group. In G group, postoperative MD and PSD were significantly deteriorated after surgery ( $P<0.01$ ). The number of deteriorated test points was  $12.2 \pm 8.3$  in G group and  $1.4 \pm 2.2$  in C group. Fourteen out of 68 test points were deteriorated in  $>30\%$  of 29 eyes in G group and were located in the nasal half of outer ring. In both groups, GCC thickness was significantly decreased after surgery ( $P<0.01$ ), and its postoperative value of G group was significantly thinner than C group ( $P<0.01$ ). BCVA was significantly improved after surgery in both groups ( $P<0.01$ ). In G group, a multivariate regression analysis identified preoperative PSD as the associated factor for MD changes ( $\beta=-0.396$ ,  $P=0.03$ ).

**Conclusions:** In glaucomatous eyes with ERM or MH, retinal sensitivity in central 10 degrees, especially in the nasal half of outer ring, may deteriorate after vitrectomy with ILM peeling.

**Commercial Relationships:** Shunsuke Tsuchiya, None;

Tomomi Higashide, None; Kazuhisa Sugiyama, None

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**Presentation Time:** 12:00 PM–12:15 PM

**Topline Results From Prospective, Double-masked, Placebo Controlled Phase 2 Clinical Study Evaluating Luminate® (ALG-1001) in Patients with Symptomatic Focal Vitreomacular Adhesion**

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**Purpose:** To investigate the safety and efficacy of Luminate (ALG-1001), a synthetic anti-angiogenic and vitreolytic oligopeptide, administered intravitreally in patients with focal vitreomacular adhesion (VMA) or vitreomacular traction (VMT).

**Methods:** Patients were randomly assigned to four groups. Group 1 received intravitreal Luminate 2.0 mg, Group 2 received Luminate 2.5 mg, Group 3 received Luminate 3.2 mg, and Group 4 (control) received an intravitreal injection of balanced salt solution. Intravitreal injections were administered monthly until VMA or VMT release was achieved for a total of 90 days with three maximum injections. VMA or VMT release was determined by optical coherence tomography (OCT) images read by Duke Reading Center. The primary endpoint of this study was observation of pharmacologic resolution of VMA by OCT, with VMA defined as vitreous adhesion to the macula within a 6mm central retinal field determined on OCT.

**Results:** One hundred and six patients from approximately 20 sites in the United States and Europe were included in this analysis. Sixty-five percent of patients treated with the 3.2 mg dose of Luminate achieved release of VMA or VMT by Day 90 ( $p=0.0129$ ), compared to 21% of those in the 2.5 mg group, 23% in the 2.0 mg group, and

10% of those in the placebo control group. For all groups, 48% of all releases occurred after the first injection, 32% occurred after the second injection, and 20% of all releases occurred after the third injection. The most commonly reported AEs were conjunctival hyperemia and sub-conjunctival hemorrhage at the injection site. There was no incidence of drug toxicity or significant intraocular inflammation, no afferent pupillary defects, and no evidence of retinal tears or detachments among all groups.

**Conclusions:** Data from this phase 2 VMA/VMT trial demonstrated that Luminate met its primary endpoint of VMA or VMT release. Luminate was well-tolerated in all Luminate dosing groups.

**Commercial Relationships:** Baruch D. Kuppermann, Novartis (C), Allegro (C), GSK (F), Ophthotech (C), Glaukos (C), Genentech (C), Alimera (C), Regeneron (C), ThromboGenics (C), Allergan (C); David S. Boyer, Allegro Ophthalmics (C); Peter K. Kaiser, Allegro Ophthalmics (C); Jeffrey S. Heier, Allegro Ophthalmics (C); Peter A. Campochiaro, Allegro Ophthalmics (C); Hugo Quiroz-Mercado, Allegro Ophthalmics (C); Julia Kornfield, Allegro Ophthalmics (C); Lisa Karageozian, Allegro Ophthalmics (C); Mohamed A. Genead, Allegro Ophthalmics; Hampar L. Karageozian, Allegro Ophthalmics; Vicken H. Karageozian, Allegro Ophthalmics  
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**Presentation Time:** 12:15 PM–12:30 PM

**Insight into lamellar macular holes: two distinct clinical entities**

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**Purpose:** To investigate whether lamellar macular holes can be divided into different subgroups.

**Methods:** In this institutional study, clinical charts and Spectral-Domain Optical Coherence Tomography (OCT) images of 112 eyes of 100 consecutive patients diagnosed with lamellar macular hole were reviewed.

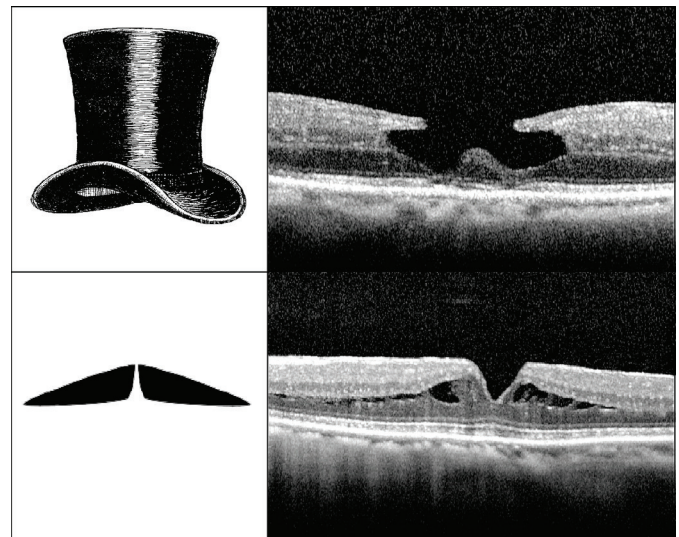
In OCT imaging, the presence of lamellar macular hole was defined according to the following findings: presence of irregular foveal contour, separation of the layers of the neurosensory retina, and the absence of full thickness macular defect.

Mean outcome was the morphological and functional characterization of different subtypes of macular hole.

**Results:** Two different subtypes of lamellar macular hole were identified: tractional and degenerative. The first type, tractional, had a “moustache” appearance, was diagnosed in 47 eyes (42%), and was characterized by the schisis separation of neurosensory retina between outer plexiform and outer nuclear layers. It often presented with an intact ellipsoid layer (98%, 46/47) and was associated with tractional epiretinal membranes and/or vitreo-macular traction (97%, 45/47). The second type, degenerative, had a “top hat” appearance, was diagnosed in 53 eyes (47%), and its distinctive traits included the presence of intra-retinal cavitation that could affect all retinal layers. It was often associated with non-tractional epiretinal proliferation (98%, 52/53) and a retinal “bump” (87%, 46/53). Moreover, it often presented with early ellipsoidal zone defect (95%, 50/53) and its pathogenesis, although chronic, and progressive remains poorly understood.

Twelve eyes (11%) shared common features with both tractional and degenerative lamellar macular holes and were classified as mixed lesions.

**Conclusions:** Degenerative and tractional lamellar macular holes are two distinct clinical entities. A revision of the current concept of lamellar macular holes is needed.



**Commercial Relationships:** Andrea Govetto, None; Hamid Hosseini, Steven D. Schwartz, None; Jean Pierre Hubschman, None

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**Presentation Time:** 12:30 PM–12:45 PM

**Factors Associated with Development of Dissociated Optic Nerve Fiber Layer (DONFL) Appearance in the PIONEER Study**

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**Purpose:** The cause of the Dissociated Optic Nerve Fiber Layer (DONFL) appearance after membrane peeling for vitreomacular interface (VMI) disorders remains unknown. We used intraoperative OCT (iOCT) to examine the relationship between retinal alterations during membrane peeling and postoperative development of DONFL appearance.

**Methods:** This was a post-hoc analysis of eyes undergoing membrane peeling for VMI disorders in the PIONEER study, an IRB-approved prospective study examining iOCT in ophthalmic surgery. A microscope mounted SD-OCT probe (Bioptigen) was used to obtain pre-incision and post-peel iOCT images. Exclusion criteria included lack of follow-up OCT from 3-12 months postoperatively and poor iOCT or postoperative OCT image quality. iOCT images were assessed for microarchitectural changes including inner, middle, and outer retinal thickness. Clinical variables assessed included indication for surgery and membrane peeling technique (e.g., diamond-dusted membrane scraper [DDMS], forceps). Primary outcome was development of DONFL appearance on 6 month follow-up SD-OCT.

**Results:** Ninety-nine eyes were included in the study. Preoperative diagnosis included epiretinal membrane (ERM) in 54 eyes (55%), macular hole (MH) in 41 eyes (42%), and vitreomacular traction syndrome (VMT) in 3 eyes (3%). The OCT-based prevalence of DONFL appearance at 6 months was 33%. Prevalence of DONFL appearance was 9.3% in eyes with ERM and 63.4% in eyes with MH. In eyes where forceps alone were used for membrane peeling, prevalence of DONFL appearance was 30.4%, while in eyes where DDMS was used, prevalence was 34.6% (p=0.66). Quantitative analysis of iOCT and acute postoperative retinal layer changes identified increased inner retinal layer thickness as a significant factor associated with postoperative development of DONFL appearance (p = 0.02).